Session: Energy-aware Storage Systems
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In the Big Data and Cloud Computing era, the management of energy consumption by servers and data centers has become a major concern and therefore a challenging issue for companies, institutions, and even countries. In data-centric applications, data management and analytic systems are one of the major energy consumers when loading, searching and exploring data via complex queries. Several recent initiatives have been proposed to deal with these challenging issues, covering both hardware and software dimensions. Such approaches can be broadly classified into either (a) the data storage systems are already deployed on a given platform with a big, hard to change, workload, or (b) they are in the development phase with test workloads, which gives opportunities for planning.

These new challenges require innovative and effective optimization solutions for minimizing power consumption in terms of storage (archiving, longer time windows, replication), computation (math, efficient I/O) and data transfer (across computers in the cloud and outside the cloud). These solutions must consider hardware (energy-efficient devices, storage cost, dynamic voltage and frequency scaling, etc.) as well as software (energy-aware selection algorithms for optimized data structures such as materialized views, indexes, partitioning, resource scheduling algorithms, development of cost models to estimate the energy consumption when executing queries, and so on).

The main goal of this energy-centric session is to bring together researchers and practitioners who are interested in addressing technological issues and research challenges related to optimizing data storage system power consumption, energy efficient systems, networks, among others. Both theoretical papers and applied papers describing practical experiences are welcome.

The session topics include (but are not limited to) the following:

- Energy consumption measurements, models, and monitoring tools
- Revisiting traditional life cycle of database design (conceptual, logical, ETL, physical) to include energy dimension
- Large-scale data integration considering energy requirements
- Selection of Deployment platforms complying with energy requirements
- Data management of Energy Data
- Query language design, query processing considering energy
- View and table selection algorithms for Physical Optimization Structures (indexes, materialized views, compression, etc.)

- Extended Database Cost Models for Energy
- Benchmarks for Power Consumption Analysis
- Machine learning for estimating energy cost model parameters
- Cost Models Calibration
- Energy-efficient communication and computing technologies
- Energy-aware networking architecture and protocols
- Elastic Sizing of Database Servers in the Cloud
- Standards and metrics for green communications
- Energy-aware algorithms and application design
- Green computing in multi core/many core and GPU systems
- Intelligent Energy Management
- Energy-efficient query scheduling and resource allocation
- Energy-efficient grid, cloud, and data center technology
- Energy efficiency and virtualization
- Energy-aware high performance computing and applications